

Notice of Allowability

Application No.

09/770,907

Examiner

Hussein A. El-chanti

Applicant(s)

CHERIAN ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/23/2006.
2. ☒ The allowed claim(s) is/are 1-3,5,7,9-14,17-26,28 and 30-34.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


ARIO ETIENNE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

EXAMINER'S AMENDMENT

1. Claims 1—3, 5, 7, 9-14 and 17-26, 28 and 30-34 are directed to an allowable product. Pursuant to the procedures set forth in MPEP § 821.04(B), claim 7, directed to the process of making or using an allowable product, previously withdrawn from consideration as a result of a restriction requirement, is hereby rejoined and fully examined for patentability under 37 CFR 1.104.
2. Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the restriction requirement as set forth in the Office action mailed on July 14, 2006 is hereby withdrawn.** In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.
3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Roger Fulghum on Jan. 5, 2007.

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4. The application has been amended as follows:

Claim 1. (currently amended) A method for correlating the execution throttle levels of the servers of a network to the command queue depth of the storage controllers in the network, each of the storage controllers managing one or more logical storage units, comprising the steps of:

identifying the servers of the network;

identifying the logical ownership of each logical storage unit on the network;

verifying that a rule governing the command throughput of the servers and storage controllers of the network is satisfied, the rule defining a relation between the execution throttle levels of the servers of the network and command queue depth of the storage controllers of the network; [[and]]

wherein verifying said rule comprises:

summing, for each storage controller, the execution throttle levels of the servers that are identified as owning the logical storage units managed by the storage controller;

determining, for each storage controller, whether the summed execution throttle level exceeds the command queue depth of the storage controller; and if the summed execution throttle level exceeds the command queue depth then [[adjusting]]

incrementing or decrementing the execution throttle level of at least one server of the network in response to a determination that the rule was not satisfied.

Claim 14 (currently amended) A storage area network, comprising:

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a plurality of servers within the network, each server having an execution throttle;

a plurality of storage controllers coupled to the network,

each storage controller having a command queue depth, and

each storage controller managing one or more logical storage units; wherein the execution throttle level of each server is set such that the execution throttle of each server is correlated to the command queue depth of each storage controller wherein the correlation of the execution throttle levels of each server to the command queue depth of each storage controller is governed by a rule that, for each storage controller if the network, the sum of the execution throttle levels of the servers having logical ownership over a LUN of the storage controller does not exceed the command queue depth of the storage controller;

wherein the execution throttle level of the servers is increased or decreased such that the sum of the execution throttle levels of the servers associated with a storage controller for which the rule was not satisfied does not exceed the command queue depth of the storage controller.

Claim 15: (canceled).

Claim 16: (canceled).

Claim 17 (currently amended) The storage area network of claim[[16]] 14, wherein the execution throttle level of the servers of the storage area network may be adjusted and verified repeatedly until the sum of the execution throttle level of the

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servers associated with a storage controller for which the rule was not satisfied does not exceed the command queue depth of the storage controller

Claim 21 (currently amended) A method for setting the execution throttle levels of a plurality of servers in a storage area network, the storage area network including a plurality of storage controllers, each of the storage controllers having associated therewith one or more logical storage units, comprising the steps of;

identifying for each storage controller the servers that logically own each of the logical storage units managed by the storage controller;

summing, for each storage controller, the execution throttle levels of the servers that are identified as owning the logical storage units managed by the storage controller;

determining, for each storage controller, whether the summed execution throttle level exceeds the command queue depth of the storage controller; and

if the summed execution throttle level exceeds the command queue depth,

[[adjusting]] incrementing or decrementing the execution throttle level of one or more of the servers of the storage area network.

Claim 22 (currently amended) A method for correlating the execution throttle levels of the servers of a network to the command queue depth of the storage controllers in the network, each of the storage controllers managing one or more logical storage units, comprising the steps of:

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identifying the servers of the network;

identifying the logical ownership of each logical storage unit of on the network;

providing independent server execution throttles for each storage controller that is accessed by the servers;

verifying that a rule governing the command throughput of the servers and storage controllers accessed by the servers is satisfied, the rule defining, for each storage controller, a relation between the independent execution throttle levels of the servers accessing the storage controllers associated with the storage controller and the command queue depth of the storage controller;

wherein verifying said rule comprises:

summing, for each storage controller, the execution throttle levels of the independent servers that are identified as owning the logical storage units managed by the storage controller;

determining, for each storage controller, whether the summed execution throttle level exceeds the command queue depth of the storage controller; and if the summed execution throttle level exceeds the command queue depth then [[adjusting]] incrementing or decrementing the independent execution throttle level of at least one server in response to a determination that the rule was not satisfied.

5. Claims 1—3, 5, 7, 9-14 and 17-26, 28 and 30-34 are allowed.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hussein A. El-chanti whose telephone number is (571)272-3999. The examiner can normally be reached on Mon-Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571)272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hussein El-chanti

Jan. 5, 2007


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